

## Escape the Drape Divide by Making Off-Service Rotations a Part of Surgery and Anesthesia Residencies

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### Abstract

Unfortunately, the drape dividing the anesthesiologist from the surgeon is far too often a symbol of a greater divide in both communication and culture between the 2 specialties. When anesthesiologists and surgeons spend time rotating on each other's services, they develop a mutual respect for each other's clinical acumen and foster open communication channels for times of both routine clinical care and crisis. There is no better time than in residency, and no better way than cross-training, for anesthesia and surgical residents to hone these skills.

### History Shows Need for Cross-Training

The relationship between surgeons and anesthesiologists has evolved over time as the fields of surgery and anesthesiology have developed. At the beginning of the 19th century, surgery changed from being a trade practiced by seasoned artisans to a profession practiced by trained specialists.<sup>1</sup> With this change in status came [changes in surgical training](#). Rather than book learning, surgical training emphasized developing practiced skills through clinical care of patients under the tutelage of a mentor; this new model became known as the Halsted model.<sup>1</sup> Throughout the 20th century, surgical education became more formalized. Various governing bodies were created to oversee this formalization—most notably, the American Board of Surgery, established in 1937, and the Accreditation Council for Graduate Medical Education (ACGME), established in 1981.<sup>2</sup> In 1999, the ACGME developed the 6 core competencies (medical knowledge, patient care, interpersonal and communication skills, professionalism, practice-based learning and improvement, and systems-based practice), which are viewed as foundational to resident education.<sup>3</sup> No longer focusing solely on imparting knowledge, resident education has undergone a shift to including teaching *skills*.<sup>3</sup>

The field of anesthesia has also undergone transformative change. Although the first public demonstration of anesthesia was by a dentist in 1846, the [field of anesthesiology](#) truly started to blossom only in the early 20th century with the advent of endotracheal tubes and neuraxial blockade.<sup>4</sup> Soon anesthesia went from being administered by nurses who were trained on the job to physicians who underwent years of rigorous specialized training in the field of

anesthesiology.<sup>4</sup> The first anesthesiology residency program was created at the University of Wisconsin in 1927.<sup>4</sup> Like surgical residencies, anesthesiology residencies developed formalized criteria and governing bodies (such as the American Board of Anesthesiology) beginning in the 1930s.<sup>4</sup> More recently, the ACGME core competencies were instituted.<sup>4</sup>

Here, we will argue that cross-training anesthesia and surgery residents—that is, having surgery residents rotate on anesthesia rotations and anesthesia residents rotate on surgical rotations—contributes to the fulfillment of every single one of the core competencies and should be an integral component of resident education.

### **Benefits of Cross-Training Residents**

*Medical knowledge.* All surgical residents can benefit from a thorough understanding of principles and techniques already mastered by their anesthesiology colleagues. These concepts include airway management in complex patients, sedation and pain control in the perioperative setting, monitoring of the critically ill patient, and evaluation and management of the physiological derangements caused by surgical insults. For example, it is paramount for thoracic surgeons to understand the anesthetic risks associated with induction with general anesthesia for a patient who has superior vena cava syndrome from a mediastinal tumor. Preinduction preparation must include lower extremity intravenous access and possibly even draping a sterile field prior to induction due to the risk of rapid cardiovascular collapse. Thoracic surgeons need to understand what the anesthesiology team will be doing to mitigate such a patient's risk, and both teams need to communicate throughout the process. Surgeons' anesthesiologist colleagues are the experts in these domains and have a long history of teaching their own residents the nuances of surgical and critical care physiology. In the same way, anesthesia residents need to master surgical positioning, intraoperative complications, and estimated postoperative recovery time. They must have a general understanding of a large array of surgical procedures in terms of both their key operative steps and postoperative recovery times. In these ways, cross-training contributes to the core competency of increasing medical knowledge for both anesthesia and surgery residents.

*Interpersonal and communication skills.* In addition to shared knowledge, cross-training promotes better communication. At our institution, both anesthesiology and surgery attending physicians provide coverage in the surgical intensive care unit (ICU). As junior surgical and anesthesia residents rotate through the ICU, they can develop relationships with attending physicians that extend into the operating room. For example, an anesthesia resident in the ICU might be the first to consider an epidural for pain control for a multisystem trauma patient with multiple rib fractures. In addition to convincing the surgeon of the plan of pain control, the anesthesia resident would be able to facilitate the coordination of the epidural, including communication with the attending

anesthesiologist regarding the timing and placement of the epidural. Later, when these anesthesiology residents are more senior and making crucial decisions for critically ill, complex patients, an already existing collegial relationship with ICU attending physicians will be an important component of formulating the best decision for the patient. The same is true of interprofessional communication between residents. For example, many postsurgical patients have epidural catheters placed, and the management of these at our institution is by the anesthesiology acute pain service. Communication between the surgical and pain teams regarding management of the catheter (ie, adjustment in rate and duration of use of narcotic) is more efficient and much more pleasant when the 2 residents already know each other by name. Furthermore, if communication patterns are not established and reinforced in a nonurgent setting, high levels of efficient communication cannot be reproduced in an emergency, and patient care suffers.<sup>5,6,7</sup>

Enhanced communication becomes even more relevant in emergency situations. Simulations are used in residency training for critical airway management and code situations in order to teach communication and practical skills,<sup>5,6,7</sup> and these simulations are excellent opportunities to practice cross-specialty communication. In fact, reinforcing team-based skills through simulation is becoming a priority in resident education,<sup>3,8,9,10</sup> especially with duty-hour restrictions and the increase in subspecialization.<sup>1</sup> Of course, the natural extension of simulating roles is not only practicing these roles in real clinical scenarios as a trainee but also seeing the clinical scenarios from across the drape.

*Systems-based practice.* The real purpose of improving communication skills and opening multidisciplinary lines of communication is improving patient care. Perhaps the best example of an initiative with this goal is enhanced recovery after surgery (ERAS<sup>®</sup>) programs. These programs, which were largely spearheaded by anesthesiologists and then adopted by surgeons, demonstrate the impact on patient related outcomes<sup>11</sup> that institutional programs based on interprofessional partnerships can have. [ERAS programs](#) are institutional protocols that standardize intraoperative and postoperative care for standard procedures. For example, for lung resections such as lobectomies, intraoperative fluid resuscitation is kept to a minimum, and chest tubes are placed to water seal on postoperative day 1. This evidence-based protocol has been shown to improve outcomes such as length of stay, duration of chest tube, and postoperative narcotic use for large groups of patients.<sup>11</sup>

*Professionalism.* An important element of perioperative patient care is to make the patient feel safe going into the operating room. That sense of safety can be greatly enhanced if the patient trusts his or her entire care team, including both the surgeon and the anesthesiologist. The surgeon usually has the opportunity to build a relationship with the patient well before the day of surgery by meeting the patient in the office. The anesthesiologist, on the other hand, is

usually only meeting the patient for the first time on the day of surgery, although the anesthesia team members are usually the first clinicians to see the patient the day of surgery. It is vital for the anesthesia team members to stress their own confidence in the surgical team and vice versa in order to build patient confidence prior to the surgery. Residents' or attending physicians' expression of negative attitudes toward the surgical or anesthesia team can lead to patient fear and mistrust.<sup>12</sup> By rotating on each other's services, residents can learn the challenges of their counterparts' roles and might be more likely to speak favorably of their procedural partners.

*Practice-based learning and improvement.* Better communication fosters not only clinical but also scientific collaboration, which contributes to improving patient care and medical practice. Unfortunately, the anesthesia and surgical literatures rarely overlap, even when they are discussing very similar patient populations. This silo effect could be mitigated through resident cross-training. Gathering intraoperative anesthetic data (sedation doses, pressor use, and reversal agents) to better understand postoperative surgical outcomes would enrich the surgical literature. Similarly, using more postoperative outcome data, such as emergency room visits, could help guide anesthetic practices. At our institution, all surgery and anesthesia residents are required to participate in quality improvement initiatives. The most productive of these are interdisciplinary in nature.

*Patient care.* Finally, the most important benefit of residency cross-training is improved patient care. It is well known that good interprofessional communication improves patient outcomes. For example, in one survey of trauma team members, the majority of respondents reported that the preinduction "time-out" improves patient care.<sup>13</sup> The first time the surgeon addresses the anesthesiologist should not be to say "incision" when the operation begins. Rather, communication between the two should start in the preoperative area with discussion of the joint surgical-anesthetic plan. This plan should then be reconfirmed in the operating room, where aspects of the surgery such as monitoring requirements, expected approach, duration, and blood loss, as well as anticipated problems, should be discussed prior to starting the procedure. Finally, good communication should extend beyond the operating room. Many times, anesthesiologists at our institution visit the postoperative patients on the floor to see how they are recovering from surgery. There is an open line of communication between both teams after the surgery to allow for opportunities for improvement.

One example of enhanced patient care occurred recently on our thoracic surgery service. A patient with an active do-not-resuscitate order required a pleurodesis. She was very wary of prolonged intubation and made this clear to the surgical and anesthesia teams. When the anesthesia team members met her in the preoperative area, they had concerns regarding her ability to be extubated, especially with the insertion of a double lumen tube. The anesthesia

resident contacted the surgical resident, and the 2 teams had a discussion. In addition to the patient, both attending physicians and residents were involved. It was decided to attempt the pleurodesis under moderate sedation. The patient was induced with both teams in the room but became very sedated with a very small dose of propofol. Another discussion was had between the 2 teams, and it was decided to intubate the patient and use a bronchial blocker instead of a double lumen tube. Ultimately, the procedure was performed successfully, and the patient was extubated at the end of the case. Despite numerous changes in the surgical-anesthetic plan, an open line of communication between the teams allowed for safe, effective, and efficient patient care delivery.

### **Possible Disadvantages of Cross-Training**

For the sake of a balanced argument, we will highlight the few disadvantages of residents rotating off service. With the need to obtain case numbers, it can be difficult for residents to graduate with the experience they need in their own specialty if they spend too much time off service, especially with the further subspecialization of medical care and the diversification of both anesthesiology and surgery.<sup>14,15</sup> It is true that, for purposes of training, it is important for anesthesiologists to spend as many hours as possible practicing anesthesiology and for surgical trainees to spend as many hours as possible practicing surgery. For example, anesthesia residents who do a preliminary year in anesthesia programs rather than surgery or medicine programs do better on the anesthesia in-training examination.<sup>16</sup> Nonetheless, as we have argued, anesthesia residents rotating on surgery are still honing their skills as an anesthesiologist.

A second disadvantage occurs if residents don't embrace their off-service rotation. Occasionally, based on our experience, off-service residents can become less engaged with that rotation, thereby limiting its educational impact. At times, this lack of buy-in occurs as a result of a change in a resident's attitude, and, at others, it occurs because faculty become less engaged in teaching a resident who will move off service. Disengagement can be avoided in settings where the anesthesia and surgery departments have an excellent working relationship and faculty members of each department engage in teaching residents from all backgrounds. Overall, these small challenges of cross-training are largely overshadowed by the benefits of improved knowledge and communication.

### **Conclusion**

In conclusion, we think there is no better way to become an excellent surgeon or anesthesiologist than to rotate on a service across the drape. The educational opportunities outlast the rotation and help to breed long-lasting relationships not only between residents but also between specialties. This collaboration breeds a pleasant work environment that is more enjoyable for physicians and, most importantly, safest for patients.

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